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LACHNELLA VILLOSA AND *WOLDMARIA FILICINA*, TWO REMARKABLE CYPHELLACEOUS FUNGI FROM POLAND

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Abstract: Two overlooked cyphellaceous fungi, *Lachnella villosa* (Pers.: Fr.) Gillet and *Woldmaria filicina* (Peck) Knudsen, are discussed. Descriptions and illustrations of morphology, information on ecological conditions, and maps of distribution in Poland are provided. *Woldmaria filicina* is fully recognized in the Polish mycota for the first time.

Key words: *Lachnella*, *Woldmaria*, cyphellaceous fungi, *Matteucia struthiopteris*, ecology, Poland

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The distribution and ecology of cyphellaceous fungi in Poland is insufficiently known. There are 13 genera with 19 species known from this morphological group of basidiomycetes. With the exception of *Cyphellostereum laeve* (Fr.: Fr.) D. A. Reid (Miśkiewicz 2000) and *Flagelloscypha minutissima* (Burt) Donk (Piątek & Cabała 2004), detailed information on these fungi is still lacking from Polish literature.

Lachnella Fr. is a small genus comprising five species (Kirk *et al.* 2001), two of which were found in Poland: *L. alboviolascens* (Alb. & Schwein.: Fr.) Fr. and *L. villosa* (Pers.: Fr.) Gillet. Unfortunately, both of them were observed at the end of the 19th century and have not been collected since. *Woldmaria* W. B. Cooke is a monotypic genus named by Cooke (1961) in honor of the Swedish mycologist S. Woldmar, who in the 1950s gave the best description of the type species, *Woldmaria filicina* (Peck) Knudsen [= *Woldmaria crocea* (P. Karst.) W. B. Cooke] (Woldmar 1954; Cooke 1961). The most unusual character of this basidiomycete is its peculiar ecology: basidiomes emerge from stipes of *Matteucia struthiopteris* (L.) Tod. From Poland, *Woldmaria filicina* was mentioned by Cooke (1961), who studied five collections of the fungus. Their origins are unknown because he did not give detailed information on the localities.

In recent years, new collections of *Lachnella villosa* and *Woldmaria filicina* were acquired during our studies in some regions of southern Poland. This paper is a contribution to knowledge of these two cyphellaceous fungi in Poland.

Lachnella villosa (Pers.: Fr.) Gillet (Fig. 1)

Champ. France, discomyc.: 80. 1881.

Basidiomes annual, minute, gregarious, disc- to cup-shaped, up to 1 mm in diam., stalkless, sessile to subsessile, margin inrolled when dry, outer surface whitish, pubescent, densely covered with hairs, hymenial surface white to cream-whitish; marginal hairs thick-walled, hyaline, cylindrical, acuminate, finely encrusted on the whole length; hyphal system monomitic, hyphae with clamps, thin-walled, branched, up to 4 μm wide; cystidia lanceolate, with basal clamp, 40–60 × 7–8 μm; basidia clavate, with oily content, 4 sterigmata and basal clamp, 40–50 × 10–12 μm; basidiospores ovate to cylindrical, asymmetrical, smooth, hyaline, with numerous oil drops, 7–12 × 5–8 μm.

SPECIMENS EXAMINED. POLAND. KOTLINA SANDOMIERSKA BASIN: Tarnów, Lasy Krzyskie, by

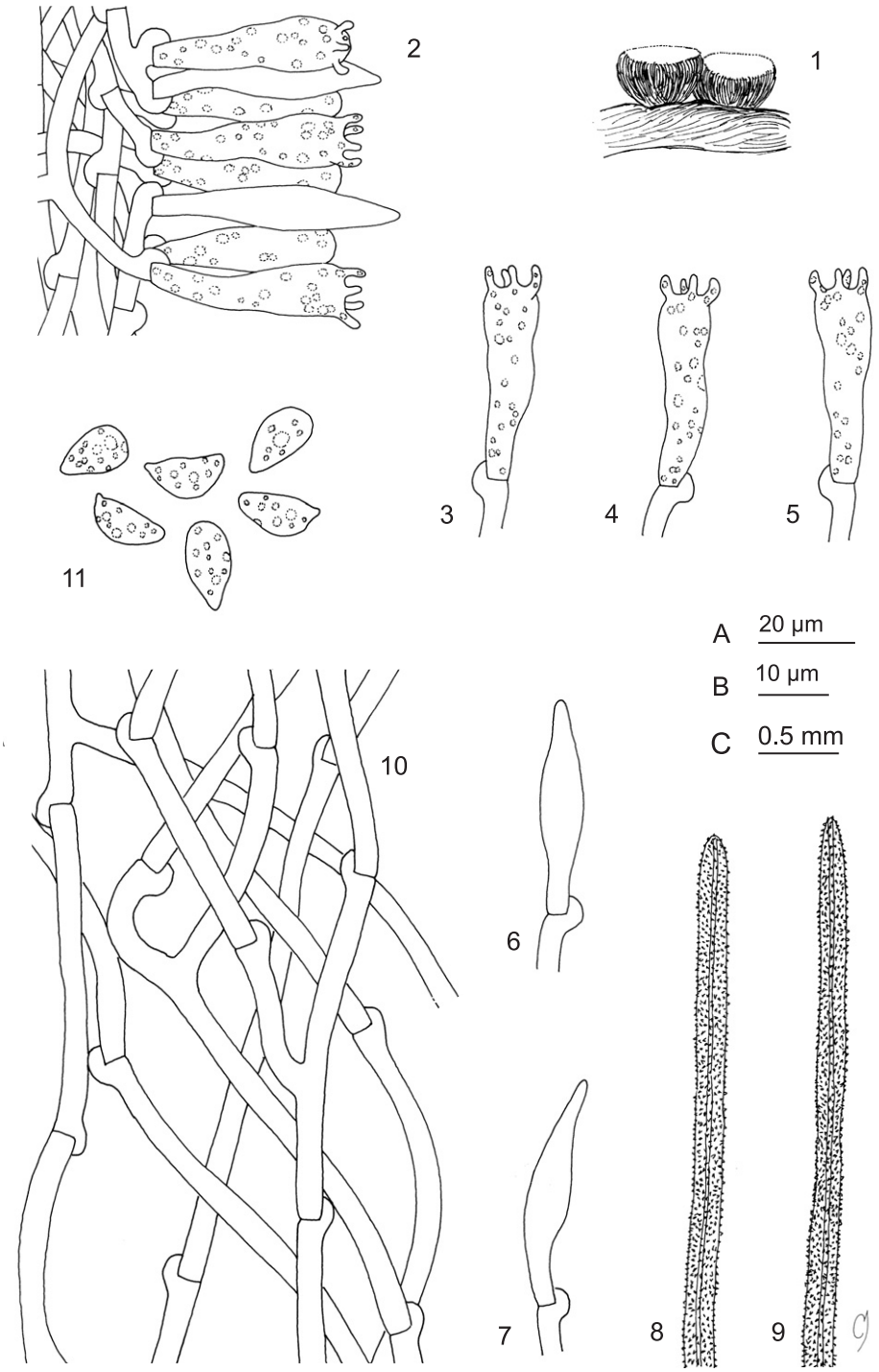

Fig. 1. *Lachnella villosa* (Pers.: Fr.) Gillet: 1 – group of basidiomes, 2 – hymenium, 3–5 – basidia, 6–7 – cystidia, 8–9 – marginal hairs, 10 – hyphae, 11 – basidiospores; scale bars: A – 2–10, B – 11, C – 1 (drawn from KRAM F-51478 by J. Cabała).

Ścieżki St., on dead, dry stem of apiaceous plant, 16 May 2001, *leg. M. Piątek* (KRAM F-51478); WYŻYNA ŚLĄSKO-KRAKOWSKA UPLAND: Źródła Centurii, near Ogrodzieniec, on dead, dry stem of apiaceous plant, 14 May 2004, *leg. M. Piątek* (KRAM F-54177).

DISTRIBUTION. *Lachnella villosa* is an uncommon species in Poland. In Lower Silesia, reported localities include a glacial cirque near Śnieżka Mt. in the Karkonosze Mts, Zielona Góra, Wrocław-Osobowice, the vicinity of Niemcza and Dzierżoniów, Stradomia near Syców, the Śnieżnik massif, Kup near Opole, and Otmęt near Strzelce (Schroeter 1889). In the Wielkopolska region, Węgierki near Września was reported (Hellwig 1897). These localities are all in western Poland. The new localities in Tarnów and źródła Centurii springs reported here are in the south of the country (Fig. 2). The high number of localities reported by German mycologists at the end of 19th century indicates that this species is not rare but merely overlooked because its small size. *Lachnella villosa* is not very rare in Europe, occurring in Austria, Belgium, Croatia, the Czech Republic, Denmark, France, Germany, Great Britain, Hungary, Italy, Norway, Portugal, Slovakia, Sweden and Switzerland (Cooke 1961; Hansen & Knudsen 1992; Lizoň & Bacigálová 1998; Tkalčec & Mešić 2002). It is also rather common in North America, where it was reported from Canada and several states of the United States (Ginns & Lefebvre 1993). Single collections are reported from all other continents except Antarctica. *Lachnella villosa* is known in Africa from Tunis; in Asia from China, Ceylon and the Philippines; from Australia and New Zealand; and in South America from Argentina, Chile and Ecuador (Cooke 1961; Segedin & Pennycook 2001).

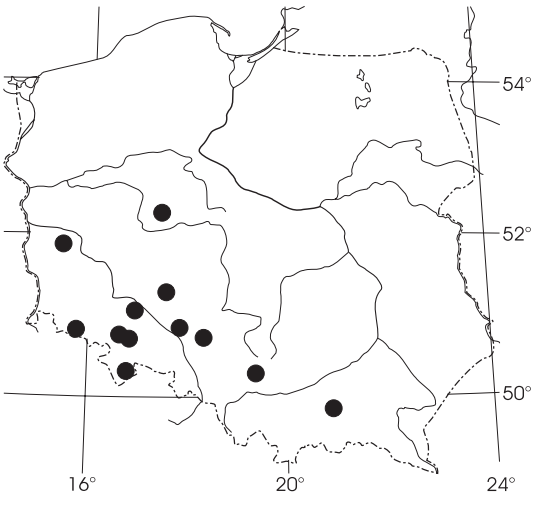

Fig. 2. Distribution of *Lachnella villosa* (Pers.: Fr.) Gillet in Poland.

ECOLOGY. This fungus was reported by Cooke (1961) as occurring on herbaceous plant and twigs of woody plants, being present on numerous vascular plants. In Poland it was found on unspecified herbaceous plants and *Thymus serpyllum* L. *emend*. Fr. Very little is known about the habitat conditions of *Lachnella villosa*. In Tarnów it occurred in mesic herb-rich forest with *Fraxinus excelsior* L. and introduced *Quercus rubra* L. in a disturbed place, and in źródła Centurii springs in herb-rich scrub.

NOTES. *Lachnella alboviolascens* (Alb. & Schwein.: Fr.) Fr. is morphologically similar to *Lachnella villosa* but differs by the absence of cystidia, slightly larger basidiomes exceeding 1 mm in diameter, and broader basidiospores ranging from 8 to 12 μm. *Lachnella alboviolascens* is known from only five old localities in Zielona Góra, Brynica near Opole (Schroeter 1889), Warsaw's Łazienki Park (Chełchowski 1888) and Botanical Garden (Błoński 1896), and the vicinity of Międzyrzec Podlaski (Bresadola 1903). This species has not been found in Poland in recent years but may very well be found.

Woldmaria filicina (Peck) Knudsen (Fig. 3)

Nordic J. Bot. **16**: 219. 1996.

= *Woldmaria crocea* (P. Karst.) W. B. Cooke, Beih. Sydowia **4**: 29. 1961.

Basidiomes annual, minute, densely gregarious, cylindrically elongated, sessile, margin inrolled, outer surface brown, smooth, covered with yellow-brown hairs visible under a strong lens, hymenial surface brown; marginal hairs thick-walled, cylindrical, acuminate, yellow-brown at the base and hyaline at the top, smooth, septate; hyphal

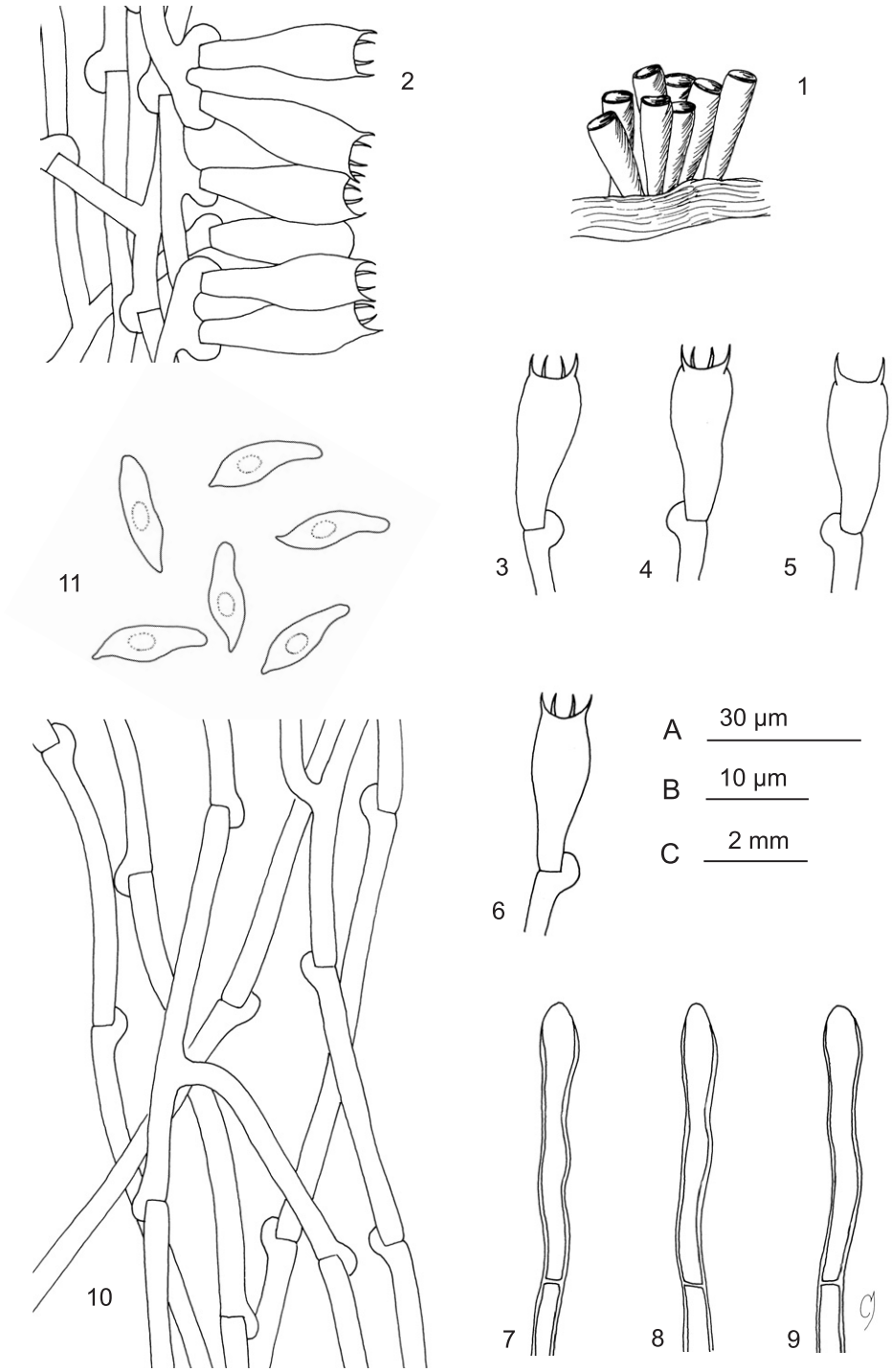

Fig. 3. *Woldmaria filicina* (Peck) Knudsen: 1 – group of basidiomes, 2 – hymenium, 3–6 – basidia, 7–9 – marginal hairs, 10 – hyphae, 11 – basidiospores; scale bars: A – 2–10, B – 11, C – 1 (drawn from KRAM F-51212 by J. Cabała).

system monomitic, hyphae clamped, thin-walled, branched, up to 4 μm wide; basidia clavate, with 4 sterigmata and basal clamp, 25–30 × 6–8 μm; basidiospores fusiform, apiculate, smooth, hyaline, with central oil drop, 10.0–13.0 × 3.0–4.5 μm.

SPECIMENS EXAMINED. POLAND. KOTLINA SANDOMIERSKA BASIN: Słotwina Reserve, *ca* 14 km E of center of Tarnów, on *Matteucia struthiopteris*, 19 July 2000, *leg. M. Piątek* (KRAM F-51210, 51212, 51213); Tarnów, Stary Cmentarz cemetery, by S. Konarskiego St., on *Matteucia struthiopteris*, 20 July 2000, *leg. M. Piątek* (KRAM F-51209); Tarnów, between Krzyska St. and Nowodąbrowska St., on *Matteucia struthiopteris*, 30 Oct. 2001, *vid. M. Piątek*; BRAMA KRAKOWSKA GATE: Kraków, Botanical Garden, on *Matteucia struthiopteris*, 20 Oct. 2001, *vid. M. Piątek*; WESTERN CARPATHIANS. Pogórze Rożnowskie foothills: Jamna, Potoki farmstead, *ca* 28 km SW of center of Tarnów, on *Matteucia struthiopteris*, 21 July 2000, *leg. M. Piątek* (KRAM F-51211); Bieśnik, in Paleśnianka stream valley, on *Matteucia struthiopteris*, 24 Aug. 2000, *leg. M. Piątek* (KRAM F-51475); Borowa, in Paleśnianka stream valley, near Styr Reserve, on *Matteucia struthiopteris*, 18 Oct. 2000, *leg. M. Piątek* (KRAM F-51396); Pieniny Mts: Pieniny National Park, Polana Rówieńki, on *Matteucia struthiopteris*, 11 July 1996, *vid. A. Bujakiewicz*; Bieszczady Mts: Bieszczady National Park, Dolina Terebowca valley near Ustrzyki Górne, on *Matteucia struthiopteris*, 30 June 1995, *vid. A. Bujakiewicz*.

DISTRIBUTION. *Woldmaria filicina* is known from nine localities widely scattered in southern Poland at both natural and non-natural sites of *Matteucia struthiopteris* (Fig. 4). As a rule, populations of the fungus are more abundant at natural localities of the host plant than at non-natural places. This may be explained by the ecology of the fungus, which needs to grow in a moist mesoclimate, available only at natural sites of *Matteucia struthiopteris*. The richest locality was found in the Słotwina Reserve on the Płaskowyż Tarnowski plateau, but the species was also abundant at other places such as the Dolina Terebowca valley in the Bieszczady Mts and near Polana Rówieńki in the Pieniny Mts. At these places it formed numerous basidiomes on most plants of *Matteucia struthiopteris*. Elsewhere in Europe, this unusual cyphellaceous fungus is known from Austria, the

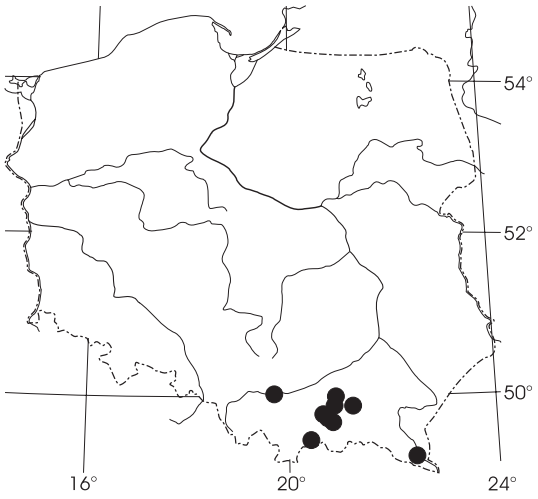

Fig. 4. Distribution of *Woldmaria filicina* (Peck) Knudsen in Poland.

Czech Republic, Denmark, Finland, Norway, Romania and Sweden (Pilát 1926; Kotlaba & Pouzar 1975; Bontea 1985; Forstinger *et al.* 1990; Hansen & Knudsen 1997). In North America it is widely scattered in some parts of Canada: Manitoba, Nova Scotia and Ontario (Cooke 1961; Ginns & Lefebvre 1993). In the United States it is known from New York (Bujakiewicz 1987).

ECOLOGY. *Woldmaria filicina* is a host-specific species, occurring almost exclusively on *Matteucia struthiopteris*. Cooke (1961) listed some further host plants such as *Onoclea struthiopteris* (L.) Roth, *Struthiopteris germanica* Willd. and *Pteretis* sp., but these all names are synonymous with *Matteucia struthiopteris*. In addition to these plants, Ginns and Lefebvre (1993) gave *Pinus* sp., but this is a probably a misidentification because *Pinus* sp. cannot be a host for *Woldmaria filicina*. Apparently the only host other than *Matteucia struthiopteris* is *Osmunda cinnamomea* L. Bujakiewicz (1987) reported *Woldmaria filicina* from the United States on this fern. On *Matteucia struthiopteris* it occurs on dead, sterile and fertile fronds and old stipes; rarely it forms basidiomes on living sterile fronds. The biotopes of the species in Poland are at natural sites such as wet alder forests, riverine forests and *Alnetum incanae*, as well as artificial sites such as

cemeteries and gardens. In gardens its occurrence is limited by the removal of old stipes, which are the favored part of the host plant.

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